Allegato / *Annex B*

PROGETTO DI RICERCA / RESEARCH PROJECT
(max 5 pagine / max 5 pages)

Borse DM 351/2022 **Scholaships DM 351/2022** Vedi scheda del corso e art. 2 del bando. *Refer to PhD Sheet and art. 2 of the Call.*	Selezionare una sola opzione. *Select only one option:* [✓]PA [ ]PC [ ]PNRR [ ]TDA
Borse DM 352/2022 **Scholaships DM 352/2022** Vedi scheda del corso e art. 3 del bando. *Refer to PhD Sheet and art. 3 of the Call.*	Indicare il codice della borsa DM 352/2022 per la quale si intende partecipare. *Insert the code of the DM 352/2022 scholarship to apply.* [PNNR. 351/2022
Borse di Ateneo su tema vincolato ***Scholarships on specific research topic*** Vedi scheda del corso. *Refer to PhD sheet.*	Indicare il codice della borsa di ateneo con tema vincolato per la quale si intende partecipare. *Insert the code of the University scholarship on specific research topic:* [BA._____]

Titolo del progetto / Project title	Experimental Oncology and Surgery
Corso di dottorato / PhD	COVID-19 and Dentistery.Safety protocols in dentistery and oral medicine for all Infectious agents transmittable at the dental chair

Introduction:

In December 2019, at Wuhan city, China first case of Corona virus appeared. Corona virus was named by World Health organization (WHO) as SARS-COV-2 and Covid-19 because it is appeared in year 2019. It is thought that Covid-19 is transmit from bat to human with the means of another eatable animals. Novel corona virus (COVID-19) become pandemic around globe, which become a global health energy in 213 countries with 4,809,284 deaths and 235,308,300 confirmed cases.

(Beeraka et al., 2021). COVID-19 from 2019 till up-to now affect global health mentally and economically. World health Organization, global media, virus expert and health experts from the whole world from the first till now give updates and recommendation about corona virus. Sub-groups of corona virus are alpha, beta, gamma and delta around the globe. In Pakistan, first case of corona virus reported on February 26, 2020 in Karachi where a patient has travel history from Iran. (Abid et al., 2020)

During this pandemic reported in April 2020 that among 278 frontline doctor 6 percent were dentist. As the have direct contact with the patient to expose to their oral cavity and aerosols droplet. The deaths of dentist among the globe reported in Italy, China Spain, Pakistan, US and Iran. (Souza et al., 2021) Dentists are the health professionals which are at high risk during Coid-19. The American Dental Association issue a proper guidelines protocols for dentist to within safe zone during duty. There are different components which can becomes a direct and indirect transmission. 1. direct expose to droplets, Silva, blood and sputum 2. Use of unhygienic equipment used by infected patient 3. Inhalation of contaminated air in dental clinics 4. Aerosol spread through mucosal contact. (Nam & Kim, 2021) To overcome this pandemic World Health Organization, recommend the use of proper Personal Protective Equipment and stop the transmission of Corona virus in environment. The use of PPE (Face mask, Gloves, eye shield and gown) become mandatory for doctors, front line worker, paramedical staff and nurses in health care setups.(Ahmad & Osei, 2021) Also, it was suggested to each and every person to keep safe themselves by wearing masks and gloves. The follow up of protocols give fruitful results in the decrease of corona virus transmission in society. According to reports, worldwide gloves and masks production increase up to 11% in 2020. The only way to save lives during pandemic is the utilization of PPE which can decrease the chances of corona transmission. (Rizan et al., 2021)

Rather than these positive aspects of PPE used in dental clinics also, these are leading environmental risk which will record in high quantity in near future. A huge quantity of PPE mostly disposed of in sewage system from dental clinics like face sheets, gloves after dental surgery and disposable lab coat. This contaminated PPEs and dental clinic surface can be a source of transmission of COVID-19. (Haddad et al., 2021)

According to WHO guidelines, corona virus can survive on surface and plastic for nine to ten hours. Most of the PPE's and dental clinics surface materials are made of polyethene plastics, that needs more time to keep hygienic. As according to WHO corona virus can present on plastic

and polytene for almost Nine to ten hours. (Sangkham, 2020) To overcome the spread of corona virus from dental clinics and its environment there are four area which can improve the dental clinics and team member safety. That are Risk elimination, Use of Proper PPE, Proper disposal of PPE and hygienic instrumentation usage. (Benzian et al., 2021)

At the start of 2019, corona virus transmission was announced by mouth droplets, hand shaking and sharing utensils with infected person. To stop the transmission of corona virus whole world lock downed for almost for one and half year. Still there are too many restrictions around globe especially on travelling. That helped people too much from the exposure to deadly corona virus. But on other hand, unfortunately, world lost 4.8 million people and in which mostly front-line worker doctors, nurses, and paramedics. The spreading speed was minimized with help of following hygienic protocols, proper hand washing, use of sanitizer and wearing masks. (Corman et al., 2020). In this pandemic, data analytics played an important role in investigating the salient features of COVID-19 and eventually find a vaccine for it. The route of corona virus transmission thought to be droplets and person to person contact but recently its evident from publication that corona virus can be transmitted through oral-fecal route. Corona virus in infected individual shed in feces by which it transmits to another individual. Transmission of corona virus occurred through oral contact, silva of infected person and exposure to fecal material of in infected indIuvial. Mainly enter through mouth and spread in whole body. Feces and waste water of infected person mainly from isolated wards and homes comes out to environment through sewage lines. Mostly drinking water pipelines are passing through sewage cannel to reach community. Which can become as source of oral fecal transmission in healthy person (Mondal etal., 2020).

Statement of purpose:

From December 2019 till 2021, about 4.8 million humans lost their lives, 2.4 Billon corona virus positive cases reported. Among them most are dentist as well due to their direct interaction with droplets. As whole world dentists are using PPE and follow up WHO and American Dental Association guidelines but on other hand these PPE and Dental Clinics equipment can be source of transmission of coronavirus. The purpose of this research to find out the risk and quality of protocols used by dentist. The quality of protocol follow up can be find out by surveillance study. Surveillance program applied for the detection of corona virus in environment and surfaces of instruments used in clinics. In future, environmental Surveillance will be gold standard for the

eradication and preventive measure. Bio-surveillance helps in the finding of high alert area where chances of spread of corona virus is high. In surveillance swab sample obtained from dental instruments and open air in dental clinics. Also, in some cases sewage waters were treated for the detection of virus. Area selection for surveillance depends on cases ration reported population wise. In most cases, there are present asymptomatic individuals that become carriers for virus to healthy people. Foe the eradication of corona virus after the vaccination of whole world environmental surveillance will pay vital role. Hope so one day this world will corona virus free. Environmental surveillance needs proper lab setup, trained team, proper resources and protocols by the WHO regional team.

Aim and Objective:

This study was designed for the surveillance of corona virus present on the surface of dental clinics and PPE used by dentists during duty hours. This study will helpful in the prevention of dentist and other paramedic team working in dental clinics. The main objectives are given below:

1- Dental surface role in Corona virus transmission
2- Characterization the quality of dental PPE protocol
3- Identify the area in dental clinics which may lead the transmission of corona virus
4- Assess the dental surface contamination of corona virus
5- Checking level of awareness about safety protocols in staff of dental clinics

Materials and Methods:

1- Site Identification for sampling:

Sites will be selected on the bases of high case ratio and deaths rate due to covid-19. We will target the dentists' clinics and dental hospitals. From where we collect sample and also fill questionnaire as well. (WHO Guidelines for Environmental Surveillance, 2003)

2- Swab Sample Collection:

There are two types of swab samples will be collected. One from Air flow of Clinic corridor, Waiting area, X-ray room and Treatment room. Second type from surface like dental chair, instruments used in surgery, face sheet, gloves and dust din. The swab along with synthetic tip and plastic shaft will be used. The swab sample will be transported in neutralizing medium. (WHO guidelines for surface sampling).

3- Transportation Method:

The swab will remove from the package and wet it with transport medium. Swab will be moved in two opposite directions in vial. Multiple swab sample will collect to increase the environmental sample positive predictive value. Control sample will be collected at same sampling site. Swab vial will keep in self seal bag and sterilize with ethanol and keep this bag in another seal bag for transportation. Proper documentation and labeling along with time, date and location is important. (WHO, 2020)

4- RNA extraction

For Purified RNA extraction Kit of spin stat (0.1) will be used. RNA will be reversed transcript and after transcription it will store at -20℃.

5- Genome Sequencing and Phylogenetic studies

For the amplification of product Qiagen sequencing kit will be use. PCR final products will be sent for genomic sequencing. Sequencing results will be compared with different variant phylogenetic data already available on genomic data base. (Sharif et al., 2021)

Expected Results:

From the above cited experimental research, there will be found evidences for the identification of transmission of corona virus in the dentists and other staff. New routes of corona virus transmission will be identified along with week sites in dental clinics. It will help for the prevention of dentists while oral cavity treatment and make themselves protective from deadly disease in future.

Tentative Project Time Plan:

Following proposed time plan is made	
November 2022	Approval of proposal, planning study and Selection of target sites
January 2023	Project start, comprehensive literature reviews, and field work
August 2024	Lab experiments, Data Analysis, writings, integration

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